

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at **page 2, line 3**, and insert the following rewritten paragraph:

On the other side, it is necessary for the oxidant gas to be brought into contact with the cathode 203 effectively. To this end, many ~~grooves 208~~...grooves 208 are provided in the face 207a of the second separator 207, and by the grooves 208 ~~grooves 208~~... being covered when the diffusion layer 205 is disposed on the face 207a of the second separator 207, second flow passages (not shown) constituting oxidant gas flow passages are formed.

Please replace the paragraph beginning at **page 2, line 10**, and insert the following rewritten paragraph:

And in the first separator 206, many cooling water passage grooves 209 ~~grooves 209~~... are provided in the reverse face 206b to the face 206a, and many cooling water passage grooves (not shown) are provided in the reverse face 207b to the face 207a in the second separator 207.

Please replace the paragraph beginning at **page 2, line 15**, and insert the following rewritten paragraph:

By the first and second separators 206, 207 being brought face to face, the

cooling water passage grooves 209 ~~grooves 209~~... of each are brought together to form cooling water passages (not shown).

Please replace the paragraph beginning at **page 8, line 13**, and insert the following rewritten paragraph:

Preferably, the thermoplastic resin is ~~made~~ a resin selected from ethylene / vinyl acetate copolymers, ethylene / ethyl acrylate copolymers, straight-chain low-density polyethylene, polyphenylene sulfide and modified polyphenylene oxide, and the conductive material is ~~made of~~ at least one type of carbon particle selected from black lead, Ketchen black and acetylene black.

Please replace the paragraph beginning at **page 14, line 22**, and insert the following rewritten paragraph:

By the first and second separators 20, 30 being vibration-welded together like this, cooling water passage grooves 21 ~~grooves 21~~... in the first separator 20 are covered by the second separator 30 and form cooling water ~~passages 22~~ passages 22 (see Fig. 4).

Please replace the paragraph beginning at **page 14, line 26**, and insert the following rewritten paragraph:

Cooling water supply openings 23a, 33a in the centers of the top ends of the

first and second separators 20, 30 and cooling water discharge openings 23b, 33b in the centers of the bottom ends of the first and second separators 20, 30 connect with these cooling water passages 22....passages 22.

Please replace the paragraph beginning at **page 15, line 3**, and insert the following rewritten paragraph:

The first separator 20 has fuel gas passage grooves 24....grooves 24 (see Fig. 2) on a fuel gas passage formation face (contact face) 20b, and by the anode diffusion layer 15 being placed on the fuel gas passage formation face 20b the anode diffusion layer 15 covers the fuel gas passage grooves 24 grooves 24....and forms fuel gas passages 25....passages 25 (see Fig. 4).

Please replace the paragraph beginning at **page 15, line 9**, and insert the following rewritten paragraph:

Fuel gas supply openings 26a, 36a in the left sides of the top ends of the first and second separators 20, 30 and fuel gas discharge openings 26b, 36b in the right sides of the bottom ends of the first and second separators 20, 30 are connected to these fuel gas passages 25....passages 25.

Please replace the paragraph beginning at **page 15, line 14**, and insert the following rewritten paragraph:

The second separator 30 has oxidant gas passage grooves 37 ~~grooves 37~~...in an oxidant gas passage formation face (contact face) 30b, and by the cathode diffusion layer 16 being placed on the oxidant gas passage formation face 30b the cathode diffusion layer 16 covers the oxidant gas passage grooves 37 ~~grooves 37~~...and forms oxidant gas passages 38...~~passages 38~~ (see Fig. 4).

Please replace the paragraph beginning at **page 15, line 20**, and insert the following rewritten paragraph:

Oxidant gas supply openings 29a, 39a in the right sides of the top ends of the first and second separators 20, 30 and oxidant gas discharge openings 29b, 39b in the left sides of the bottom ends of the first and second separators 20, 30 are connected to the oxidant gas passages 38...~~passages 38~~.

Please replace the paragraph beginning at **page 15, line 25**, and insert the following rewritten paragraph:

Next, referring to Fig. 2, the first separator 20 is a member formed in a substantially rectangular shape (see Fig. 1) with a resin made by mixing a conductive material with a thermoplastic resin, and has many cooling water passage grooves grooves 21 ~~21~~...in a cooling water passage formation face 20a and has many fuel gas passage grooves 24 ~~grooves 24~~...in the fuel gas passage formation face 20b.

Please replace the paragraph beginning at **page 17, line 11**, and insert the

following rewritten paragraph:

As shown in Fig. 3, the second separator 30, like the first separator 20, is a member formed in a substantially rectangular shape (see Fig. 1) with a resin made by mixing a conductive material with a thermoplastic resin, and has a bonding face 30a formed flat and has many oxidant gas passage grooves 37 ~~grooves 37~~... in an oxidant gas passage formation face 30b.

Please replace the paragraph beginning at **page 19, line 8**, and insert the following rewritten paragraph:

By the anode diffusion layer 15 being brought together with the fuel gas passage formation face 20b, fuel gas passages 25... ~~passages 25~~ are formed by the fuel gas passage grooves 24 ~~grooves 24~~... and the anode diffusion layer 15.

Please replace the paragraph beginning at **page 20, line 5**, and insert the following rewritten paragraph:

And, as a result of the cathode diffusion layer 16 being brought together with the oxidant gas passage formation face 30b, by the oxidant gas passage grooves 37... ~~grooves 37~~ and the cathode diffusion layer 16 the oxidant gas passages 38... ~~passages 38~~ are formed.

Please replace the paragraph beginning at **page 22, line 17**, and insert the

following rewritten paragraph:

The cooled molding 53 is cut to a predetermined length with a cutter 57 of a cutting machine 56, and the cut ~~pellets 58~~... pellets 58 are stocked in a stock tray 59.

Please replace the paragraph beginning at **page 22, line 23**, and insert the following rewritten paragraph:

The ~~pellets 58~~ pellets 58... obtained in the previous step are fed into a hopper 61 of a second extrusion-molding machine 60 as shown with an arrow, and the fed ~~pellets 58~~ pellets 58... are extrusion-molded by the second extrusion-molding machine 60. ~~A-extrusion-molded~~Extrusion-molded moldings 62 thus extrusion-molded are rolled with rollers 63 to form a band-shaped sheet 64.

Please replace the paragraph beginning at **page 23, line 1**, and insert the following rewritten paragraph:

A pressing machine 65 is provided on the downstream side of the rollers 63, and this pressing machine 65 has upper and lower press dies 66, 67 above and below the sheet 64, respectively.

Please replace the paragraph beginning at **page 23, line 4**, and insert the following rewritten paragraph:

The upper press die 66 has tongues and grooves (not shown) in a press face 66a facing a second side 64b of the band-shaped sheet 64. These tongues and grooves are for press-forming the fuel gas passage grooves 24...grooves 24 (see Fig. 4) in the second side 64b of the band-shaped sheet 64.

Please replace the paragraph beginning at **page 23, line 9**, and insert the following rewritten paragraph:

The lower press die 67 has tongues and grooves (not shown) in a press face 67a facing a first side 64a of the band-shaped sheet 64. These tongues and grooves are for press-forming the cooling water passage grooves 21... grooves 21 in the first side 64a of the band-shaped sheet 64.

Please replace the paragraph beginning at **page 23, line 15**, and insert the following rewritten paragraph:

The upper and lower press dies 66, 67 are disposed at a press starting position P1, both sides 64a, 64b of the band-shaped sheet 64 are pressed with the upper and lower press dies 66, 67, and with this state being maintained the upper and lower press dies 66, 67 are moved as shown by the arrows a, b at the extrusion speed of the band-shaped sheet 64. In this way, cooling water passage grooves 21 grooves 21... are press-formed in the first side 64a of the band-shaped sheet 64, i.e. the side corresponding to the cooling water passage formation face 20a (see Fig. 4), and fuel gas passage grooves 24 grooves 24... are press-formed in the

second side 64b of the band-shaped sheet 64, i.e. the side corresponding to the fuel gas passage formation face 20b (see Fig. 4), whereby the band-shaped sheet 64 is formed into a separator starting material 68.

Please replace the paragraph beginning at **page 24, line 9**, and insert the following rewritten paragraph:

By the steps described above being repeated in turn, the cooling water passage grooves 21 ~~grooves 21...~~ and fuel gas passage grooves 24 ~~grooves 24...~~ shown in Fig. 4 are press-formed in the sides 64a, 64b of the band-shaped sheet 64.

Please replace the paragraph beginning at **page 24, line 17**, and insert the following rewritten paragraph:

By a plurality of each of the upper and lower press dies 66, 67 being provided, cooling water passage grooves 21 ~~grooves 21...~~ and fuel gas passage grooves 24 ~~grooves 24...~~ (see Fig. 4) can be press-formed continuously in the sides 64a, 64b of the band-shaped sheet 64.

Please replace the paragraph beginning at **page 25, line 1**, and insert the following rewritten paragraph:

Thus, as well as the cooling water passage grooves 21 ~~grooves 21...~~ and

the fuel gas passage ~~grooves 24~~grooves 24 shown in Fig. 4 respectively being press-formed continuously in the sides 64a, 64b of the band-shaped sheet 64 with the upper and lower press dies 66 and 67, the cooling water supply opening 23a and the gas supply openings 26a, 29a and the cooling water discharge opening 23b and the gas discharge openings 26b, 29b are formed at the same time.

Please replace the paragraph beginning at **page 25, line 11**, and insert the following rewritten paragraph:

On the downstream side of the pressing machine 65 (see Fig. 7), an electron beam irradiating apparatus 70 is provided above the separator starting material 68 obtained in the previous step, that is, above the second side 68b with the fuel gas passage ~~grooves 24~~grooves 24 press-formed in it (see Fig. 4).

Please replace the paragraph beginning at **page 25, line 16**, and insert the following rewritten paragraph:

An electron beam 72 is radiated from an electron gun 71 of this electron beam irradiating apparatus 70. With this electron beam 72, the top of the second side 68b with the fuel gas passage ~~grooves 24~~grooves 24 press-formed in it is irradiated. By this means, the second side 68b with the fuel gas passage grooves 24 press-formed in it is somewhat hardened and is made a 3-dimensional bridge structure.

Please replace the paragraph beginning at **page 25, line 23**, and insert the following rewritten paragraph:

A cutter device 73 is provided above the separator starting material 68 obtained in the previous step, on the downstream side of the electron beam irradiating apparatus 70. By a cutter 74 of this cutter device 73 being lowered as shown by the arrow i, the separator starting material 68 is cut to a predetermined dimension and first ~~separators 20~~...separators 20 are obtained. This ends the process of manufacturing the first separator 20.

Please replace the paragraph beginning at **page 26, line 19**, and insert the following rewritten paragraph:

Although a method for manufacturing a first separator 20 has been described in connection with Fig. 5 through Fig. 8, the second separator 30 may also be manufactured by the same method. However, because the second separator 30 does not have the cooling water passage ~~grooves 21~~...grooves 21 like the first separator 20, and has a flat bonding face 30a, the lower press die 67 shown in Fig. 7 does not need to have tongues and grooves for press-forming cooling water passage ~~grooves 21~~...grooves 21 in the first side of the band-shaped sheet 64 in its face facing the first side of the band-shaped sheet 64.

Please replace the paragraph beginning at **page 27, line 22**, and insert the following rewritten paragraph:

By the first and second separators 120, 130 being vibration-welded together like this, cooling water passage ~~grooves 121~~grooves 121 in the first separator 120 are covered by the second separator 130 to form cooling water ~~passages 122~~passages 122 (see Fig. 10).

Please replace the paragraph beginning at **page 28, line 3**, and insert the following rewritten paragraph:

The first separator 120 has fuel gas passage ~~grooves 124~~grooves 124 (see Fig. 10) on a fuel gas passage formation face 120b side, and by the anode diffusion layer 115 being brought together with the fuel gas passage formation face 120b and, for example, vibration-welded, the fuel gas passage ~~grooves 124~~grooves 124 are covered with the anode diffusion layer 115 and fuel gas ~~passages 125~~passages 125 (see Fig. 10) are formed.

Please replace the paragraph beginning at **page 28, line 10**, and insert the following rewritten paragraph:

Fuel gas supply openings 126a, 136a in the left sides of the top ends of the first and second separators 120, 130 and fuel gas discharge openings 126b, 136b in the right sides of the bottom ends of the first and second separators 120, 130 are connected to these fuel gas ~~passages 125~~passages 125.

Please replace the paragraph beginning at **page 28, line 15**, and insert the following rewritten paragraph:

The second separator 130 has oxidant gas passage ~~grooves 137...grooves 137~~ in an oxidant gas passage formation face 130b side, and by the cathode diffusion layer 116 being brought together with the oxidant gas passage formation face 130b and, for example, vibration-welded, the oxidant gas passage ~~grooves 137...grooves 137~~ are covered by the cathode diffusion layer 116 and oxidant gas passages 137... (see Fig. 10) are formed.

Please replace the paragraph beginning at **page 28, line 22**, and insert the following rewritten paragraph:

Oxidant gas supply openings 129a, 139a in the right sides of the top ends of the first and second separators 120, 130 and oxidant gas discharge openings 129b, 139b in the left sides of the bottom ends of the first and second separators 120, 130 are connected to these oxidant gas ~~passages 138....passages 138~~.

Please replace the paragraph beginning at **page 29, line 24**, and insert the following rewritten paragraph:

Referring to Fig. 10, the first separator 120 is a member formed in a substantially rectangular shape, as is clear from Fig. 9, and has many fuel gas passage ~~grooves 124...grooves 124~~ in a fuel gas passage formation face 120b,

and by the anode diffusion layer 115 being vibration-welded to this fuel gas passage formation face 120b fuel gas ~~passages 125~~... passages 125 is formed with the fuel gas passage ~~grooves 124~~... grooves 124 and the anode diffusion layer 115, and it has many cooling water passage ~~grooves 121~~... grooves 121 in the cooling water passage formation face 120a.

Please replace the paragraph beginning at **page 30, line 5**, and insert the following rewritten paragraph:

The second separator 130 also, as is clear from Fig. 9, is a substantially rectangular member having many oxidant gas passage ~~grooves 137~~... grooves 137 in an oxidant gas passage formation face 130b, and by the cathode diffusion layer 116 being vibration-welded to this oxidant gas passage formation face 130b the oxidant gas ~~passages 138~~...passages 138 are formed by the oxidant gas passage ~~grooves 137~~... grooves 137 and the cathode diffusion layer 116.

Please replace the paragraph beginning at **page 36, line 6**, and insert the following rewritten paragraph:

By this means the fuel gas passage ~~grooves 124~~... grooves 124 formed in the fuel gas passage formation face 120b of the first separator 120 can be covered with the anode diffusion layer 115 to form fuel gas ~~passages 125~~...passages 125.

Please replace the paragraph beginning at **page 39, line 18**, and insert the

following rewritten paragraph:

In this way, the oxidant gas passage ~~grooves 137...grooves 137~~ formed in the oxidant gas passage formation face 130b of the second separator 130 can be covered with the cathode diffusion layer 116 to form oxidant gas ~~passages 138....passages 138.~~

Please replace the paragraph beginning at **page 50, line 25**, and insert the following rewritten paragraph:

The first separator 120, as described in connection with Fig. 10, has many fuel gas passage ~~grooves 124...grooves 124~~ in a fuel gas passage formation face 120b, and by the anode diffusion layer 115 being joined to this fuel gas passage formation face 120b, fuel gas ~~passages 125...passages 125~~ is formed with the fuel gas passage ~~grooves 124...grooves 124~~ and the anode diffusion layer 115, and it has many cooling water passage ~~grooves 121...grooves 121~~ in the cooling water passage formation face 120a.

Please replace the paragraph beginning at **page 51, line 5**, and insert the following rewritten paragraph:

The second separator 130, as described in connection with Fig. 10, has many oxidant gas passage ~~grooves 137...grooves 137~~ in an oxidant gas passage formation face 130b, and by the cathode diffusion layer 116 being joined to this

oxidant gas passage formation face 130b, oxidant gas ~~passages 138...passages~~
~~138~~ are formed by the oxidant gas passage ~~grooves 137...grooves 137~~ and the
cathode diffusion layer 116.

Please replace the paragraph beginning at **page 55, line 2**, and insert the
following rewritten paragraph:

By this means it is possible to form cooling water ~~passages 122...passages~~
~~122~~ by covering the cooling water passage ~~grooves 121...grooves 121~~ formed in
the cooling water passage formation face 120a of the first separator 120 with the
bonding face 130a of the second separator 130.